

## ON LINEAL EXPRESSION AND ARCHITECTURAL DESIGN.\*

## CONSTRUCTION.

SUBSTANCES of various kinds are the architect's means of producing the form, shadow, and ornament before treated of, and it is certain that the nature of each substance, be it stone, brick, wood, mud, or iron, is adapted for a different system of putting together, varying as the substance varies in size or strength, ductility or roughness; and thus these qualities ought to determine the nature of the construction, and be the fundamental cause of any appearance, and consequently of any idea such appearance or style may present to the mind. Construction is the essential foundation of true art, and to make a skeleton within which the external form hides and does not express, is an architectural hypocrisy, which can only please until it is discovered, and is a disgrace to the designer so long as it stands. There are what may be called the enigmas or curiosities of construction, which are harmless when merely meant as tricks and not hidden,—as, for instance, the entrance-door to Fiesole Cathedral; but as a system, false construction is an unbearable and ignoble imposition—the unenviable distinction of modern times.

Of all the glorious styles of the past, what one can be named which originated or was perfected in deceit? What one can be named which does not derive its general character and merit from its true construction?

If we turn to the Grecian buildings, and the earlier examples of Roman architecture, we find that the construction is what it appears to be, and is the basis of their style, differing in character according as the size of the material differed. In all simple repose is the system of construction, and in all there is a generic likeness.

Directly the arch was introduced in Rome, it was shown without reserve, and is the great feature which marks a change of style.

In Romanesque and Norman architecture the semi-circular arch is the primary feature of their construction and character, and it is this which renders the cinque-cento and Roman arched work so capable of amalgamation with them, as may be more particularly seen at St. Mark's, Venice, the Cathedral, Siena, and at the Porte Noire, Besançon, and the Porta dei Borsari, Verona. In Gothic, the pointed arch or equilateral is the glory of its construction power, and the exponent of one fundamental character, however varied, in all its phases. The horseshoe arch is the foundation of Moorish construction, and enters even into the character of the very ornament. The palaces of Tuscany, the half-timber edifices of Europe, and modern engineering works, are likewise fine examples of character founded on construction, and the more these are anatomised, the more is reason satisfied of the effect being founded on the actual cause.

As a progress in construction occurred, a change in character occurred; and in none of the recognised styles before the 15th century do we find the actual construction hid or falsified in order to retain the appearance of a past system, and consequently there is always a progression to something new.

Now let us turn to modern Europe, more especially England, and analyse a few of its largest buildings. Let us strip them of their ashlar work, clamped on to the true skeleton, and what do we find? Arches of every size in every direction. It is most true, we have been grossly deceived: there are seldom fine blocks of stone like those of Greece and Rome. No simple unscientific repose; but a work of much scientific and ingenious contrivance. This may be very clever and curious; but it is essentially a vicious and inexcusable system. Is the arch an unsightly invention that we should seek to hide it? Is the nobler work to be covered that the inferior work may be seen? It is unreasonable and absurd; yet such is the case with many of the largest buildings in England, which are the product of a system fundamentally false. It is the same in Gothic and many other revivals of the day: the peculiar features arising from a necessary method of construction are still retained, without the construction which produced them.

The commencement of this dates back some

\* See p. 454, ante.

260 years. It was the revival of the antique which produced it, and it reckons among its first adopters the justly-celebrated name of Palladio. The same blind passion for an imitation of antiquity, at the cost of reason and sense, then began, and now more glaringly and grossly continues a system, which, having no foundation on truth, must in time fail. What is past, is past; let us only act up to the principle of true construction—let us only allow, as every ingenious mind must, that everything founded on deceit is unstable and vitally wrong, and we shall, by a little trouble, thought, and experience, rid ourselves of a disgrace, and lay the groundwork of new and better things. For we may be sure that the more Science advances the more Art advances; new forms require new developments, and original construction requires original Art to aid it. Had Sir C. Wren kept to the old Italian system of construction, we should have no such treasures as Bow and St. Bride's; his knowledge of construction was the foundation of his originality; and, as regards the method of discovering original construction, it is not amiss to use the very words of this great, venerable, and virtuous man:—

"Nature in the best of her works is apparent enough in obvious things, were they but curiously observed, and the key that opens treasures is often plain and rusty, but unless it be gilt it makes no show at court;" which sentence would seem to imply that to nature we must turn for hints and new ideas in construction and science generally, and that it is the province of Art so to beautify them as to render them fit for public show.

Can there be any doubt that the invention of the pointed arch and groined roof not only gave us the flying buttresses and pinnacles, but that the style thus produced, evoked also a new style of ornament with it, and that the primary feature of the pointed arch is the soul, the vivifier of the whole system? and it is curious to remark that the pointed Howtell moulding came into use simultaneously with the pointed arch.

As regards our own country we need only cast our eyes around to know that brick is the principal building material, not only plain and plastered, but even where stone is the apparent material. Where stone is used alone it is generally of small size. Rubble work and flint are not unusual. Now it is evident that the method of spanning any ordinary voids with such materials, is by arching, and this, in fact, is the plan pursued in the great mass of building, including that bungling method called the straight arch. The power such forms have of producing ornament, has been strangely neglected, and the poor and pitiful custom of hiding the agreeable radiating joints of the work by some meagre mouldings or architrave stuck on in composition, forms the usual sum total of invention. Yet they afford excellent scope for ornament in themselves, and combine well with a variety of other forms which may be designed around them.

It is not so much, however, in domestic architecture the arch is to be advocated,—it exists and wants only taste and attention to render it ornamental; but it is seriously to be considered whether it should not be the grand and primary feature of the noblest works architecture can produce,—whether all the styles of the past, unfitted to the habits of the day, foreign to us, and requiring deceit and unnecessary expense to produce them, should not give way to true construction, to the noble and calm grandeur of the semi-circular arch, giving it that first place which it deserves, and which it is pre-eminently fitted to retain, and which, appreciating the value of varied mouldings, and the friendliness of shadow, would, in a short time, bring forth a corresponding style of ornament, neither so monotonous as classic, nor so grotesque as Gothic.

That such a style will partake much of Romanesque, or Norman, character, is doubtless; and, indeed, founded in a great measure on the same principle, will yet carry out in a more perfectly scientific and artistic manner, what in them we can only consider as the commencement of a grand system.

May the arch then be the foundation of our triumph, and nature, ever varied and charming, with her leaves and flowers, her treasures, animate and inanimate, our encyclopaedia of ornament!

It would be impossible, by writing, to give any detailed account of the parts which form any style, and one can merely point out those more striking features which are to be avoided or sought. Every component part of architecture, forming a feature or subject by itself, should consist of three divisions: base, body, and capping. We see this in dædæ, columns, entablatures, and the building itself. The same should hold good in string-courses and balconies, and in any ornamental feature consisting of the ornamental part, as principal, a projection to protect it, in a measure, and a head to carry it off into the wall. In walls too much attention cannot be paid to the base. It is a feature generally much neglected; its general character should be firm, bold, and striking. In many of the Venetian palaces it forms a very remarkable feature; in Gothic architecture, also, its value is well understood. The Strozz Palace exhibits the effect of its deficiency. Above all things, a diminished column, any one of the orders supporting an arch, except on a small scale, is to be avoided. Thus, with the superimposed impost, is the great drawback to Brunelleschi's architecture at San Lorenzo and Santo Spirito, Florence. The same may be seen at the Town Hall, Lucca, and its contrast at the Town Hall, Siena, and more signally at the cathedral porch, Lucca. At San Ferdinando, Lucca, the effect of the arches resting on single columns is that of a crushing weight on an inadequate support; the same at Pisa Cathedral; and the simplest contrast in the round undiminished column may be seen in most early Norman churches, Orvisio Cathedral, and the church of the Friars, Venice.

The column as designed by the Greeks was for quite another purpose, and never can be justly used for this as it stands; even a single undiminished column, though better, is not enough. We shall require rather piers than columns,—more approaching to the piers of the Loggia dei Lanzi, Florence, and the piers of Cremona, Parma, and Siena cathedrals.

Pilasters are equally to be shunned, as indefinite in character and affording no scope for original embellishment; they are neither truly ornamental nor useful, as generally applied, yet something of the same nature, more of a moulded buttress and with more capital, would be highly effective. Nothing is so poor and unmeaning as a single angle pilaster, but its constant introduction shows the perception that something is wanted, and one might well receive hints from the rusticated angles of Roman palaces, most examples of Gothic art, and some of the Tuscan palaces.

Apparent weakness is to be decidedly avoided, however strong the reality may be. An arch containing two smaller arches, with no central support—a series of projecting arches in the same way, to form palpi or balcony—the old form of projecting sounding boards—coved galleries without bracketed supports—and the projecting eaves of railway architecture, are all in bad taste; for strength, apparent strength, is the first demand of the spectator.

Walls may be in many cases strengthened by the introduction of circular work, filled up or not as stone dictates: between arches of any size it should always be used, and may be made very ornamental; besides relieving the lateral thrust, care should be taken always to show the radiating points.

The introduction of iron and glass will also materially affect the design, but these, as being secondary means of construction, should be adapted to the character of the whole building. In fine, whatever system of construction is adopted—equilibrium, arch, corbelling, or simple repose—it should form the key-note, to which all the other parts of the building—proportion, form, shadow, and ornament, should harmonise.

## MOULDINGS.

There are two principles diametrically opposed for the appliance of mouldings, viz. projection and recession. Classical architecture shows the first, Gothic and Norman have adopted the last, and in many cases combine both; this is as regards their relation to the face of wall. Again, the Southern and their followers have designed their mouldings for the sake of light, the Northern for the sake of shadow; this is as regards their actual forms. The reason, why the Northern did this, would